



SEQUENCE LISTING

<110>Ulrich, Ricky
Jeddeloh, Jeffrey A.
Oyston, Petra

<120> Glanders/Melioidosis Vaccines

<130> 003/267/SAP

<140> 10/620,242

<141> 2003-07-15

<150> US 60/386,257

<151> 2002-07-15

<160> 44

<170> Apple Macintosh Microsoft Word 6.0

<210> 1

<211> 612

<212> DNA

<213> *B. mallei* ATCC 23344 AHS gene *bmaI1*

<400> 1

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| acttggcggc | tgatctgggc | ctttatcggc | acggagtttt | 80 |
| cgctcgagcag | ctcggctgga | aactgccgtc | ggcaagcgaa | 120 |
| gggttcgagc | gggatcagta | cgatcgcgac | gataccgtct | 160 |
| atgtgttcgc | ccgcgacgac | gacggggaaa | tctgcggctg | 200 |
| cgcccggctg | ctgccgacga | cccggccgta | tctgctgaag | 240 |
| gaactgttcc | cgacgctggg | cgcgcaagac | atgccgttgc | 280 |
| cgcaatccgc | cgccgtctgg | gaattgtcgc | gcttcgccgc | 320 |
| gaacgccgag | gatccggccg | ggggcggcaa | cccggcctgg | 360 |
| gcggtgcgcc | cgatgtctgc | cgccgtcgtc | gagtgcgccg | 400 |
| cgcggtcttg | cgcgaaagcaa | ctgatcggcg | tgacgtttct | 440 |
| gagcatggag | cgccgtgttc | gccggatcgg | cgtgcacgcg | 480 |
| caccgggcgg | ggcccgcgca | gcagatcgac | gggcgcacatg | 520 |
| tcgtcgcgtg | ctggatcgac | ctcgacgcgc | aaacgctcgc | 560 |
| cgcgctcgat | ctcgaccgcg | tgctgtgcgc | gccgcccgcg | 600 |
| gaagccgcct | ga | | | 612 |

<210> 2

<211> 609

<212> DNA

<213> *B. mallei* ATCC 23344 AHS gene *bmaI3*

<400> 2

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| atgtcataca | tcatcgcggg | ccgattgaac | gaactgccgc | 40 |
| cgcacgtcca | gaccgatctc | ggcgcgtatc | gctacgacgt | 80 |

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gttcgtgcgc cggctcggct ggacgatcgc cggccactcg 120
ctcgacgaac atgcggagtg ggacgagttc gacgggccgt 160
cgacgattca tgtcgtcgcg ctcgacgacg cgcgcgagat 200
ctgcggctac gcacgcctgc tgccgacgac gggcccgtat 240
ctgctgcgcg acgtgtttgc gcatctgctc ggctcgtcgc 280
ccgcgccgca atcgcttgcg gtctgggaaa tgtcgcgctt 320
cgccgcgtcg cggcggcggc gaagcgcgac cgagcgcgag 360
ccgctcggca tggcgcttct tccgtcggtg ctcacgggtg 400
ccgcgtcgtc cggcgcgacg cgcgtggtcg gcgtgatgac 440
gccatcgatc gaacgcctgt accgccgctc gggcatcgcg 480
ctgcacgcgc tcggcaacgc gatgccgggc gcgggcggca 520
gcctgtccgc atgctcgatc gatctgccgc gcctcgcgtt 560
cgcgccgttg ggcctcaagc agtgcgcggc gtgcctggcg 600
atgcattga 609

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<210> 3

<211> 720

<212> DNA

<213> *B. mallei* ATCC 23344 transcriptional regulator gene
bmaR1

<400> 3

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atggaactgc gctggcaaga cgcctatctt caatttagcg 40
ccgcggagaa cgagcagcag ctcttccaac agatcgccgc 80
gtatacgaag cggctcggct tcgaatattg ctgctatggc 120
atacgcgtgc cgttgccgat ctggaagccg gtcgtcgcga 160
ttttcgacac ctatccgaac ggctggatgg agcgtacca 200
ggaaatgaac tacctggagg tcgatccgac cgtacgcgag 240
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gcgcgagcga cgcgacgacg ctctggagcg acgcgcgcga 320
tcacgggctg gcggtcggcg tcgcgcagtc gagctggggc 360
tcgcgcgggg tgttcggtct cctgacgata gcgcggcaca 400
cggaccgcct gacgtccgcc gagatcaacc atctgacgtt 440
gcaggcgaac tggctcgcga acatgtcgca ctcgctgatg 480
agccgttttc tcgtgccgaa gctcgcgccc gaatcgggcg 520
tggcgctcac gcaccgcgag cgggaggtgc tgtgctggac 560
gggagagggc aagaccgcgt gcgagatcgg gcagatcctc 600
agcatctccg agcgcacggt gaactttcac gtcaacaaca 640
tcctcgacaa gctcggcgcg acgaacaagg tgcaggccgt 680
cgtgaaggcg atcgcgatgg ggctcatcga cgcgccgtaa 720

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<210> 4

<211> 609

<212> DNA

<213> *B. mallei* ATCC 23344 transcriptional regulator gene
bmaR3

<400> 4

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cgcacgtcca gaccgatctc ggcgcgatc gctacgacgt 80
gttcgtgcgc cggctcggct ggacgatcgc cggccactcg 120
ctcgacgaac atgcggagtg ggacgagttc gacgggccgt 160
cgacgattca tgtcgtcgcg ctcgacgacg cgcgcgagat 200
ctgcggctac gcacgcctgc tgccgacgac gggcccgtat 240
ctgctgcgcg acgtgtttgc gcatctgctc ggctcgtcgc 280

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ccgcgcgcga atcgccctgcc gtctgggaaa tgtcgcgctt 320
cgccgcgctcg cggcgggcggc gaagcgcgac cgaccgcgag 360
ccgctcggca tggcggttctt tccgtcgggtg ctcacgggtgg 400
ccgcgtcgct cggcgcgacg cgcgtgggtcg gcgtgatgac 440
gccatcgatc gaacgcctgt accgccgctc gggcatcgcg 480
ctgcatcgcc tcggcaacgc gatgccgggc gcgggcggca 520
gcctgtccgc atgctcgatc gatctgccgc gcctcgcgtt 560
cgcgccggtt ggccctcaagc agtgcgcggc gtgcctggcg 600
atgcattga 609

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<210> 5

<211> 660

<212> DNA

<213> *B. mallei* ATCC 23344 transcriptional regulator gene
bmaR4

<400> 5

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agcagcgcgg tgcgcccggt gcggcccgtc gcccgtcgag 80
aacgctacgt tcggcgacga gaccgggggc gccgcgtgcg 120
cggacgggtct tgcgggcatg tcctgttcga tcgtcggccg 160
acgcttgctg cgtgcgtgtc gagtccgccc acaatcaccc 200
gcagcgggtct tcagcgggtct ttcggcgcg gcgcctggc 240
ccgccatgcg tacgaggggc catggcgcg catgttcgcg 280
gcctgccggg gcggcgctga gcgtgcgcgg cggcagccgt 320
gatgcagggt tggccggcgc gcgcgggatt cgagcgatgc 360
tcgagcgcgg agcgcgggtt cggcttcggc gcaggcggcc 400
gattgtcccg ccgcgttcga cgaaacgaac ggcgtgccgt 440
gcttcggcgg cgccggcagg aagctcgccc gcgtttcgcc 480
gcgcgcgggc cgccggttgc ctctcgcccc ttctgagcac 520
gctttcttca ttggttcgct aacgtaactt cctcacttga 560
gctgggcggg tctatgttcg aaggcttgct cattgggtcg 600
tttaacgaaa ttctgaacgc gacttgcaag aagagcctct 640
ttgagcagac ggcgtatcac 660

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<210> 6

<211> 726

<212> DNA

<213> *B. mallei* ATCC 23344 transcriptional regulator gene
bmaR5

<400> 6

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atgagggcgg cgatggggaa ctgggcggag gatctgctgg 40
cggggctcga cagcgcacga tccgaggaag aggcgtttcg 80
aagcgtcgaa accgcggcgg cggcgctcga ttctgaatac 120
tgcgcatacg ggctgcgcgt gccgtggccg ctgtccaggc 160
cgcgcatcga gacgcgcagc aactttcccg agcaatggaa 200
gcggcgctac gtcgaggcgg gtttcctcga tgtcgatccg 240
attctcgcgc acggccgcgg atcgcagcaa ccggtcgctc 280
tcgccgagac gctgttttgc tccgcgcacc agatgtgggt 320
cgaggcgcag tcgttcgggt tgcggttcgg ctgggcgcag 360
tcgagcttcg acgcgtatgg cggcatgggc atgctcgcgc 400
tcgtccgctc gcgcgagccg gtgacggcgg cggaactcga 440
cgcgaaggag taccggatgc gctggctcgt gcgcaccgcg 480
cacgccgcgc tcggccgcgt gatgttgccc aagctgatgg 520
cggacccgga gcgcgggctg accgagcgcg aggtcgaggt 560

```

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gctcaagtgg gggcggaacg gcaagacgtc cggcgagatc 600
tcgaagatcc tcgcgatatc cgtcgatacg gtgaatttcc 640
acgtgaagaa cgcgatcctg aagctcagga cggcgaacaa 680
gacggcggcc gtcgtgcgcg cggcgatgct cgggttgctg 720
agctga                                           726

```

<210> 7

<211> 612

<212> DNA

<213> *B. pseudomallei* DD503 AHS gene *bpmI1*

<400> 7

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atgcgaactt tcgttcatgg cgacgggcg ctgccgagcg 40
acttggcggc tgatctgggc ctttatcggc acggagtttt 80
cgtcgagcag ctccgctgga aactgccgtc ggcaagcgaa 120
gggttcgagc gggatcagta cgatcgcgac gataccgtct 160
atgtgttcgc ccgcgacgac gacggggaaa tctgcggctg 200
cgccccggctg ctgccgacga cccgcccgtg tctgctgaag 240
gaactgttcc cgacgctggg cgcgcaagac atgccgttgc 280
cgcaatccgc cgccgtctgg gaattgtcgc gcttcgccgc 320
gaacgccgag gatccggcgc ggggcggcaa cccggcctgg 360
gcggtgcggc cgatgctcgc cgccgtcgtc gagtgcgccg 400
cgcggtcttg cgcgaaagcaa ctgatcggcg tgacgtttct 440
gagcatggag cgccgtgttc gccggatcgg cgtgcacgcg 480
caccggggcg ggcccgcgca gcagatcgac gggcgcgatg 520
tcgtcgcgtg ctggatcgac ctcgacgcgc aaacgctcgc 560
cgcgctcgat ctcgacccgc tgctgtgcgc gccgcccgcg 600
gaagccgcct ga                                           612

```

<210> 8

<211> 621

<212> DNA

<213> *B. pseudomallei* DD503 AHS gene *bpmI2*

<400> 8

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ccaccgtcaa ggcagcactc ggcaattatc gtcgggcgat 80
attcatcgag aaactcggct ggccattgcc gttggtcgac 120
gggctcgaga tcgatcagtt cgatcgtccc gatacgattt 160
acgtgggtcgg caaaacagag tccggcgata tctgcggatg 200
cgccccgcctg ctgccacga cgaggcccta cctgctcgga 240
gaggtgttcc ccgatctgat gggcgacgcg gcgcgcgcct 280
gctcggcgca cgtgtgggaa atctcgcgat tttcgtcttc 320
gatcctctcc ggagggccgg acgcgctgcg gcaggctcac 360
cgcaatacgc gcacctctgt cgcgaaaatc gtccgctttg 400
cgcaggcggc cggcgtgaag cggctgatca ccgtttcgcc 440
gctcgcagtc gagcggctgc tcaaccgtct gaaagtccat 480
attcaccgcg cgggtccgcc tcggttgatc gacggcaagc 520
cgggtgttcgc gtgctggatc gaggtggacg acatcacgct 560
ccaagcgctc gacatcgagc cggccgcgga ttcggccgcc 600
ggcgcgctgc gccattcgtg a                                           621

```

<210> 9

<211> 609

<212> DNA

<213> *B. pseudomallei* DD503 AHS gene *bpmI3*

<400> 9

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atgtcataca tcatcgcggg ccgattgaac gaactgccgc 40
cgcacgtcca gaccgatctc ggcgcgtatc gctacgacgt 80
gttcgtgcgc cggctcggct ggacgatcgc cggccactcg 120
ctcgacgaac atgcggagtg ggacgagttc gacgggccgt 160
cgacgattca tgtcgtcgcg ctcgacgacg cgcgcgagat 200
ctgcggctac gcacgcctgc tgccgacgac gggcccgtat 240
ctgctgcgcg acgtgtttgc gcatctgctc ggctcgtcgc 280
ccgcgccgca atcgccctgcc gtctgggaaa tgtcgcgctt 320
cgccgcgtcg cggcggcggc gaagcgcgac cgagcgcgag 360
ccgctcggca tggcgttctt tccgtcggtg ctacagggtg 400
ccgcgtcgct cggcgcgacg cgcgtggtcg gcgtgatgac 440
gccatcgatc gaacgcctgt accgccgctc gggcatcgcg 480
ctgcatcgcc tcggcaacgc gatgccgggc gcgggcggca 520
gcctgtccgc atgctcgatc gatctgccgc gcctcgcgtt 560
cgcgccgttg ggccgcaagc agtgcgcggc gtgcctggcg 600
atgcattga 609

```

<210> 10

<211> 720

<212> DNA

<213> *B. pseudomallei* DD503 transcription regulator gene
bpmR1

<400> 10

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atggaactgc gctggcaaga cgcctatctt caatttagcg 40
ccgcggagaa cgagcagcag ctcttccaac agatcgccgc 80
gtatacgaag cggctcggct tcgaatattg ctgctatggc 120
atacgcgtgc cggttgccgat ctggaagccg gtcgtcgcga 160
ttttcgacac ctatccgaac ggctggatgg agcgctacca 200
ggaaatgaac tacctggagg tcgatccgac cgtacgcgag 240
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gcgcgagcga cgcgacgacg ctctggagcg acgcgcgcga 320
tcacgggctg gcggtcggcg tcgcgcagtc gagctgggccc 360
tcgcgcgggg tgttcggtct cctgacgacg gcgcggcaca 400
ccgaccgcct gacgtccgcc gagatcaacc atctgacgtt 440
gcaggcgaac tggctcgcga acatgtcgca ctgctgatg 480
agccgttttc tcgtgccgaa gctcgcgccc gaatcgggcg 520
tggcgctcac gcaccgcgag cgggaggtgc tgtgctggac 560
gggggagggc aagaccgcgt gcgagatcgg gcagatcctc 600
agcatctccg agcgcacggt gaactttcac gtcaacaaca 640
tcctcgacaa gctcggcgcg acgaacaagg tgcaggccgt 680
cgtgaaggcg atcgcgatgg ggctcatcga cgcgccgtaa 720

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<210> 11

<211> 711

<212> DNA

<213> *B. pseudomallei* DD503 transcription regulator gene
bpmR2

<400> 11

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atggagatgc acgactttct tcaatttttg ctaaacgaat 40
tttcacgcag tgagaaccca cagcacgtca tttcgtctt 80
gacccgcgcg gccgcgacgc tcggctacga atacgccgcc 120
tacggcatgc gccgccctt tccgatcagc aatccgccga 160
tcctcatggg gtccaactat cccgcccgat ggcaggaacg 200

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ctatatcgaa ggcgcatteg cgaacatcga cggcgcggtg 240
aaggccgcgc tcggcagcga ccggcccgtg acctggagcg 280
cgcccgccaa cgcacgcgaa agcgcattct gggcgagggc 320
gctgtcggtt ggcacgcgcc acggctggtc gtccgcgtcg 360
cggggcgcgg acggcgcgat cggcgtgctg acgctgtcga 400
gaacgcagga cccgatcgac accgcggaga agtttcgcaa 440
cgagagcatc gtgcactggc tcgccaatgt cgctcatgcg 480
tcgatggcgc cgttcctgcc cgccgccgac gagttcgatc 520
cggacctcac ggcgcgcgag accgatgtgc tgaaatggac 560
ggccgacgga aagacagcgt acgaaatcgc gctgattctc 600
agcatctcgg agagcaccgt caattttcac gtgaagaata 640
tcgtctccaa gctgggctcc acgaacaaga tacaggccgt 680
ggccaaggcc gcgctgatgg ggatgctgtg a 711

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<210> 12

<211> 693

<212> DNA

<213> *B. pseudomallei* DD503 transcription regulator gene
bpmR3

<400> 12

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cgctgggtcga gactttcagg caggcggcgc tgcagatcgg 80
ctaccagcac catgcgatcg tcgagctgtc gggcgcatcg 120
catccggcgt cgatcgacgt cgtctcgctg cactatccgt 160
ccgagtgggt cgagcactac acccgcaacg actacttcgc 200
gatcgatccc gtccatcgcg cggcattccg ctacagcacg 240
ccgttctcgt ggaacgacgt cgcgacggcg aacctgcgcg 280
agcggcatct gctgatggaa gccgaggacg cgggcctcga 320
caacggcatc agcatccgcg tgcatcagcc gctcggacgc 360
gtgctgctgg tgagcctgtc cggcaccgcg ccgacgcacg 400
atgccgatgc gaaatggcgc aacgcgtacc tgctcggcat 440
gcagttcaat ctgcagttcc agagcatgcg cacgtgccgc 480
ccgattccgc cgtccgtcca cctgacggat cgcgaacaga 520
tgtgcctcac gtgggtcgcg cgcggcaagt cgtcgtgggt 560
catcgcgaa atgctcgaca tctccaaata cacggtcgac 600
ttccacatcg agaacgcgat ggagaagctc aacacgcgca 640
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catctttcca tga 693

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<210> 13

<211> 885

<212> DNA

<213> *B. pseudomallei* DD503 transcription regulator gene
bpmR4

<400> 13

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cgcccgccgc acaggcgggt cgccgcgcg tgcgcgcaa 120
ccgcttgccg gcggcgggcg cgcgcgctca gatcaaccgc 160
cgcgccgatg cgatgacgac cgcttgcgcg cggttgttcg 200
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cgtgcgctcc gagatgccga gaatcttcga gatttccac 280
gccgtcttgc cgcgccccgc cactgcagc gattcgcgct 320
cgcgcgcggt cagatcgcac gagccctgcc gtctgagccg 360

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gcaatcgagc agctcgtgca tcgccgcgtg cacgaagctc 400
gcgagcaact gcgacaggct cagcagccgc agtatgtcgc 440
tcgcgtcgtg ctggaacgga tcgtcggtcg ccatgctgag 480
catgctgata gcgccgctgc gatcgtgaac ggggcaactg 520
agcccgtaga cgaggccgta cgatttcgcc tcgtcgcgca 560
tgagcttcgc gcggctggtc gtatagaggt cgtcgtgcca 600
gatgagcggc acggtccggc accggcaatg ctgaacgacg 640
ggatcgatcg acaggtagtc ggccggcgtc tagcgcagcc 680
gccactcggc cggaaatccg tcgagcatgc agcggctcga 720
cgccgcgccg gagatctgat gccggtacgc gaaattcttg 760
aagcccagtt ggcgaacgtg atacgccgtc tgctcaaaga 800
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<210> 14

<211> 726

<212> DNA

<213> *B. pseudomallei* DD503 transcription regulator gene
bpmR5

<400> 14

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aagcgtcgaa accgcggcgg cggcgctcga tttcgaatac 120
tgcgcatacg ggctgcgcgt gccgtggccg ctgtccaggc 160
cgcgcatcga gacgcgcagc aactttcccg agcaatggaa 200
gcggcgctac gtcgaggcgg gtttcctcga cgtcgatccg 240
attctcgcgc acggccgccg atcgagcaa ccggtcgtcc 280
tcgccgagac gctgttttgcg tccgcgcacc agatgtgggt 320
cgaggcgcag tcgttcgggt tgcggttcgg ctgggcgcag 360
tcgagcttcg acgcgtatgg cggcatgggc atgctcgcgc 400
tcgtccgctc gtgcgagccg gtgacggcgg cggaactcga 440
cgcgaaggag taccggatgc gctggctcgt gcgcaccgcg 480
cacgccgcgc tcggccgcac gatgttgccc aagctgatgg 520
cggaccgcga gcgcgggctg accgagcgcg aggtcgaggt 560
gctcaagtgg gcggcggacg gcaagacgtc cggcgagatc 600
tcgaagatcc tcgcgatatc cgtcgatacg gtgaatttcc 640
acgtgaagaa cgcgatcctg aagctcagga cggcgaacaa 680
gacggcggcc gtcgtgcgcg cggcgatgct cggggttgctg 720
agctga 726

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<210> 15

<211> 203

<212> PRT

<213> *B. mallei* ATCC 23344 bmaI1

<400> 15

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Met Arg Thr Phe Val His Gly Asp Gly Arg
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Leu Pro Ser Asp Leu Ala Ala Ala Leu Gly
             15             20
Leu Tyr Arg His Gly Val Phe Val Glu Gln
             25             30
Leu Gly Trp Lys Leu Pro Ser Ala Ser Glu

```

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | | | 35 | | | | | 40 |
| Gly | Phe | Glu | Arg | Asp | Gln | Tyr | Asp | Arg | Asp |
| | | | | 45 | | | | | 50 |
| Asp | Thr | Val | Tyr | Val | Phe | Ala | Arg | Asp | Asp |
| | | | | 55 | | | | | 60 |
| Gly | Glu | Ile | Cys | Gly | Cys | Ala | Arg | Leu | Leu |
| | | | | 65 | | | | | 70 |
| Pro | Thr | Thr | Arg | Pro | Tyr | Leu | Leu | Lys | Glu |
| | | | | 75 | | | | | 80 |
| Lys | Phe | Pro | Thr | Leu | Val | Ala | Gln | Asp | Met |
| | | | | 85 | | | | | 90 |
| Pro | Leu | Pro | Gln | Ser | Ala | Ala | Val | Trp | Glu |
| | | | | 95 | | | | | 100 |
| Leu | Ser | Arg | Phe | Ala | Ala | Asn | Ala | Glu | Asp |
| | | | | 105 | | | | | 110 |
| Pro | Ala | Gly | Gly | Gly | Asn | Pro | Ala | Trp | Ala |
| | | | | 115 | | | | | 120 |
| Val | Arg | Pro | Met | Leu | Ala | Ala | Val | Val | Glu |
| | | | | 125 | | | | | 130 |
| Cys | Ala | Ala | Arg | Leu | Gly | Ala | Lys | Gln | Leu |
| | | | | 135 | | | | | 140 |
| Ile | Gly | Val | Thr | Phe | Leu | Ser | Met | Glu | Arg |
| | | | | 145 | | | | | 150 |
| Leu | Phe | Arg | Arg | Ile | Gly | Val | His | Ala | His |
| | | | | 155 | | | | | 160 |
| Arg | Ala | Gly | Pro | Ala | Gln | Gln | Ile | Asp | Gly |
| | | | | 165 | | | | | 170 |
| Arg | Met | Val | Val | Ala | Cys | Trp | Ile | Asp | Leu |
| | | | | 175 | | | | | 180 |
| Asp | Ala | Gln | Thr | Leu | Ala | Ala | Leu | Asp | Leu |
| | | | | 185 | | | | | 190 |
| Asp | Leu | Pro | Leu | Leu | Cys | Ala | Pro | Pro | Ala |
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| Glu | Ala | Ala | | | | | | | |

<210> 16

<211> 202

<212> PRT

<213> *B. mallei* ATCC 23344 bmaI3

<400> 16

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Ser | Tyr | Ile | Ile | Ala | Gly | Arg | Leu | Asn |
| 1 | | | | 5 | | | | | 10 |
| Glu | Lys | Pro | Pro | His | Val | Gln | Thr | Asp | Leu |
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| Gly | Ala | Tyr | Arg | Tyr | Asp | Val | Phe | Val | Arg |
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| Arg | Leu | Gly | Trp | Thr | Ile | Ala | Gly | His | Ser |
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| Asp | Gly | Pro | Ser | Thr | Ile | His | Val | Val | Ala |
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| Leu | Asp | Asp | Ala | Arg | Glu | Ile | Cys | Gly | Tyr |

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| | | | | 65 | | | | | 70 |
| Ala | Arg | Leu | Leu | Pro | Thr | Thr | Gly | Pro | Tyr |
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| Leu | Leu | Arg | Asp | Val | Phe | Ala | His | Leu | Leu |
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| Gly | Ser | Ser | Pro | Ala | Pro | Gln | Ser | Pro | Ala |
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| Val | Trp | Glu | Met | Ser | Arg | Phe | Ala | Ala | Ser |
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| Arg | Arg | Arg | Arg | Ser | Ala | Thr | Glu | Arg | Glu |
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| Pro | Leu | Gly | Met | Ala | Phe | Phe | Pro | Ser | Val |
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| Leu | Thr | Val | Ala | Ala | Ser | Leu | Gly | Ala | Thr |
| | | | | 135 | | | | | 140 |
| Arg | Val | Val | Gly | Val | Met | Thr | Pro | Ser | Ile |
| | | | | 145 | | | | | 150 |
| Glu | Arg | Leu | Tyr | Arg | Arg | Ser | Gly | Ile | Ala |
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| Leu | His | Arg | Leu | Gly | Asn | Ala | Met | Pro | Gly |
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| Ala | Gly | Gly | Ser | Leu | Ser | Ala | Cys | Ser | Ile |
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| Asp | Leu | Pro | Arg | Leu | Ala | Phe | Ala | Pro | Leu |
| | | | | 185 | | | | | 190 |
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| Gln | Phe | Ser | Ala | Ala | Glu | Asn | Glu | Gln | Gln |
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| Leu | Phe | Gln | Gln | Ile | Ala | Ala | Tyr | Thr | Lys |
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| Arg | Leu | Gly | Phe | Glu | Tyr | Cys | Cys | Tyr | Gly |
| | | | | 35 | | | | | 40 |
| Ile | Arg | Val | Pro | Leu | Pro | Ile | Ser | Lys | Pro |
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| Val | Val | Ala | Ile | Phe | Asp | Thr | Tyr | Pro | Asn |
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| Gly | Trp | Met | Glu | Arg | Tyr | Gln | Glu | Met | Asn |
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| Tyr | Leu | Glu | Val | Asp | Pro | Thr | Val | Arg | Glu |
| | | | | 75 | | | | | 80 |
| Gly | Ala | Leu | Ser | Ser | Asn | Met | Ile | Val | Trp |
| | | | | 85 | | | | | 90 |
| Pro | Glu | Ala | Ser | Ala | Ser | Asp | Ala | Thr | Thr |

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| Leu | Trp | Ser | Asp | Ala | Arg | Asp | His | Gly | Leu |
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| Ala | Val | Gly | Val | Ala | Gln | Ser | Ser | Trp | Ala |
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| Ala | Arg | His | Thr | Asp | Arg | Leu | Thr | Ser | Ala |
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| Glu | Ile | Asn | His | Leu | Thr | Leu | Gln | Ala | Asn |
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| Trp | Leu | Ala | Asn | Met | Ser | His | Ser | Leu | Met |
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| Ser | Arg | Phe | Leu | Val | Pro | Lys | Leu | Ala | Pro |
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| Glu | Ser | Gly | Val | Ala | Leu | Thr | His | Arg | Glu |
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| Arg | Glu | Val | Leu | Cys | Trp | Thr | Gly | Glu | Gly |
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| Lys | Thr | Ala | Cys | Glu | Ile | Gly | Gln | Ile | Leu |
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| Ser | Ile | Ser | Glu | Arg | Thr | Val | Asn | Phe | His |
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| Val | Asn | Asn | Ile | Leu | Asp | Lys | Leu | Gly | Ala |
| | | | | 215 | | | | | 220 |
| Thr | Asn | Lys | Val | Gln | Ala | Val | Val | Lys | Ala |
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| Glu | Leu | Pro | Pro | His | Val | Gln | Thr | Asp | Leu |
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| Gly | Ala | Tyr | Arg | Tyr | Asp | Val | Phe | Val | Arg |
| | | | | 25 | | | | | 30 |
| Arg | Leu | Gly | Trp | Thr | Ile | Ala | Gly | His | Ser |
| | | | | 35 | | | | | 40 |
| Leu | Asp | Glu | His | Ala | Glu | Trp | Asp | Glu | Phe |
| | | | | 45 | | | | | 50 |
| Asp | Gly | Pro | Ser | Thr | Ile | His | Val | Val | Ala |
| | | | | 55 | | | | | 60 |
| Leu | Asp | Asp | Ala | Arg | Glu | Ile | Cys | Gly | Tyr |
| | | | | 65 | | | | | 70 |
| Ala | Arg | Leu | Leu | Pro | Thr | Thr | Gly | Pro | Tyr |
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| Leu | Leu | Arg | Asp | Val | Phe | Ala | His | Leu | Leu |
| | | | | 85 | | | | | 90 |
| Gly | Ser | Ser | Pro | Ala | Pro | Gln | Ser | Pro | Ala |

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| Val | Trp | Glu | Met | Ser | Arg | Phe | Ala | Ala | Ser |
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| Arg | Arg | Arg | Arg | Ser | Ala | Thr | Glu | Arg | Glu |
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| Pro | Leu | Gly | Met | Ala | Phe | Phe | Pro | Ser | Val |
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| Leu | Thr | Val | Ala | Ala | Ser | Leu | Gly | Ala | Thr |
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| Arg | Val | Val | Gly | Val | Met | Thr | Pro | Ser | Ile |
| | | | | 145 | | | | | 150 |
| Glu | Arg | Leu | Tyr | Arg | Arg | Ser | Gly | Ile | Ala |
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| Leu | His | Arg | Leu | Gly | Asn | Ala | Met | Pro | Gly |
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| Ala | Gly | Gly | Ser | Leu | Ser | Ala | Cys | Ser | Ile |
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| Asp | Leu | Pro | Arg | Leu | Ala | Phe | Ala | Pro | Leu |
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| Pro | Ser | Pro | Gln | Gln | Arg | Gly | Ala | Pro | Arg |
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| Ala | Ala | Arg | Arg | Pro | Ser | Arg | Thr | Leu | Arg |
| | | | | 25 | | | | | 30 |
| Ser | Ala | Thr | Arg | Pro | Gly | Ala | Pro | Arg | Ala |
| | | | | 35 | | | | | 40 |
| Arg | Thr | Val | Leu | Arg | Ala | Cys | Pro | Val | Arg |
| | | | | 45 | | | | | 50 |
| Ser | Ser | Ala | Asp | Ala | Cys | Val | Val | Arg | Val |
| | | | | 55 | | | | | 60 |
| Glu | Ser | Ala | Asp | Asn | His | Pro | Gln | Arg | Ser |
| | | | | 65 | | | | | 70 |
| Ser | Ala | Val | Phe | Arg | Arg | Ala | Thr | Pro | Gly |
| | | | | 75 | | | | | 80 |
| Pro | Pro | Cys | Val | Arg | Gly | Arg | Met | Ala | Gln |
| | | | | 85 | | | | | 90 |
| His | Val | Arg | Gly | Leu | Pro | Gly | Arg | Arg | Arg |
| | | | | 95 | | | | | 100 |
| Ala | Cys | Ala | Ala | Ala | Ala | Val | Met | Gln | Val |
| | | | | 105 | | | | | 110 |
| Trp | Pro | Ala | Arg | Ala | Gly | Phe | Glu | Arg | Cys |
| | | | | 115 | | | | | 120 |
| Ser | Ser | Ala | Glu | Arg | Arg | Phe | Gly | Phe | Gly |

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| Ala | Gly | Gly | Arg | Leu | Ser | Arg | Arg | Val | Arg |
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| Arg | Asn | Glu | Arg | Arg | Ala | Val | Leu | Arg | Arg |
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| Arg | Gly | Arg | Gln | Ala | Arg | Arg | Arg | Phe | Ala |
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| Ala | Arg | Gly | Pro | Pro | Leu | Pro | Ser | Arg | Pro |
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| Phe | Arg | Ala | Arg | Phe | Leu | His | Trp | Phe | Ala |
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| Asn | Val | Thr | Ser | Ser | Leu | Glu | Leu | Gly | Gly |
| | | | | 185 | | | | | 190 |
| Ser | Met | Phe | Glu | Gly | Leu | Ser | Ile | Gly | Ser |
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| Phe | Asn | Glu | Ile | Leu | Asn | Ala | Thr | Cys | Lys |
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| Asp | Leu | Leu | Ala | Gly | Leu | Asp | Ser | Ala | Arg |
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| Ser | Glu | Glu | Glu | Arg | Phe | Arg | Ser | Val | Glu |
| | | | | 25 | | | | | 30 |
| Thr | Ala | Ala | Ala | Ala | Leu | Asp | Phe | Glu | Tyr |
| | | | | 35 | | | | | 40 |
| Cys | Ala | Tyr | Gly | Leu | Arg | Val | Pro | Trp | Pro |
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| Leu | Ser | Arg | Pro | Arg | Ile | Glu | Thr | Arg | Ser |
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| Asn | Phe | Pro | Glu | Gln | Trp | Lys | Arg | Arg | Tyr |
| | | | | 65 | | | | | 70 |
| Val | Glu | Ala | Gly | Phe | Leu | Asp | Val | Asp | Pro |
| | | | | 75 | | | | | 80 |
| Ile | Leu | Ala | His | Gly | Arg | Arg | Ser | Gln | Gln |
| | | | | 85 | | | | | 90 |
| Pro | Val | Val | Leu | Ala | Glu | Thr | Leu | Phe | Ala |
| | | | | 95 | | | | | 100 |
| Ser | Ala | His | Gln | Met | Trp | Val | Glu | Ala | Gln |
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| Ser | Phe | Gly | Leu | Arg | Phe | Gly | Trp | Ala | Gln |
| | | | | 115 | | | | | 120 |
| Ser | Ser | Phe | Asp | Ala | Tyr | Gly | Gly | Met | Gly |
| | | | | 125 | | | | | 130 |
| Met | Leu | Ala | Leu | Val | Arg | Ser | Arg | Glu | Pro |
| | | | | 135 | | | | | 140 |

| | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Val | Thr | Ala | Ala | Glu | Leu | Asp | Ala | Lys | Glu | |
| | | | | 145 | | | | | 150 | |
| Tyr | Arg | Met | Arg | Trp | Leu | Val | Arg | Thr | Ala | |
| | | | | 155 | | | | | 160 | |
| His | Ala | Ala | Leu | Gly | Arg | Met | Met | Leu | Pro | |
| | | | | 165 | | | | | 170 | |
| Lys | Leu | Met | Ala | Asp | Pro | Glu | Arg | Glu | Leu | |
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| Thr | Glu | Arg | Glu | Val | Glu | Val | Leu | Lys | Trp | |
| | | | | 185 | | | | | 190 | |
| Ala | Ala | Asp | Gly | Lys | Thr | Ser | Gly | Glu | Ile | |
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| Ser | Lys | Ile | Leu | Ala | Ile | Ser | Val | Asp | Thr | |
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| Val | Asn | Phe | His | Val | Lys | Asn | Ala | Ile | Leu | |
| | | | | 215 | | | | | 220 | |
| Lys | Leu | Arg | Thr | Ala | Asn | Lys | Thr | Ala | Ala | |
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| Leu | Pro | Ser | Asp | Leu | Ala | Ala | Asp | Leu | Gly | |
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| Leu | Tyr | Arg | His | Gly | Val | Phe | Val | Glu | Gln | |
| | | | | 25 | | | | | 30 | |
| Leu | Gly | Trp | Lys | Leu | Pro | Ser | Ala | Ser | Glu | |
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| Gly | Phe | Glu | Arg | Asp | Gln | Tyr | Asp | Arg | Asp | |
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| Asp | Thr | Val | Tyr | Val | Phe | Ala | Arg | Asp | Asp | |
| | | | | 55 | | | | | 60 | |
| Asp | Gly | Glu | Ile | Cys | Gly | Cys | Ala | Arg | Leu | |
| | | | | 65 | | | | | 70 | |
| Leu | Pro | Thr | Thr | Arg | Pro | Tyr | Leu | Leu | Lys | |
| | | | | 75 | | | | | 80 | |
| Glu | Leu | Glu | Pro | Thr | Leu | Val | Ala | Gln | Asp | |
| | | | | 85 | | | | | 90 | |
| Met | Pro | Leu | Pro | Gln | Ser | Ala | Ala | Val | Trp | |
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| Glu | Leu | Ser | Arg | Phe | Ala | Ala | Asn | Ala | Glu | |
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| Asp | Pro | Ala | Gly | Gly | Gly | Asn | Pro | Ala | Trp | |
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| Ala | Val | Arg | Pro | Met | Leu | Ala | Ala | Val | Val | |
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| Glu | Cys | Ala | Ala | Arg | Leu | Gly | Ala | Lys | Gln | |
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| Leu | Ile | Gly | Val | Thr | Phe | Leu | Ser | Met | Glu | |
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| Arg | Leu | Phe | Arg | Arg | Ile | Gly | Val | His | Ala | |
| | | | | 155 | | | | | 160 | |
| His | Arg | Ala | Gly | Pro | Ala | Gln | Gln | Ile | Asp | |
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| Gly | Arg | Met | Val | Val | Ala | Cys | Trp | Ile | Asp | |
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| Leu | Asp | Ala | Gln | Thr | Leu | Ala | Ala | Leu | Asp | |
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| Leu | Asp | Pro | Leu | Leu | Cys | Ala | Pro | Pro | Ala | |
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| Gln | Leu | Asp | Ser | Thr | Val | Lys | Ala | Ala | Leu | |
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| Gly | Asn | Tyr | Arg | Arg | Ala | Ile | Phe | Ile | Glu | |
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| Lys | Leu | Gly | Trp | Pro | Leu | Pro | Leu | Val | Asp | |
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| Gly | Leu | Glu | Ile | Asp | Gln | Phe | Asp | Arg | Pro | |
| | | | | 45 | | | | | 50 | |
| Asp | Thr | Ile | Tyr | Val | Val | Gly | Lys | Thr | Glu | |
| | | | | 55 | | | | | 60 | |
| Ser | Gly | Asp | Ile | Cys | Gly | Cys | Ala | Arg | Leu | |
| | | | | 65 | | | | | 70 | |
| Leu | Pro | Thr | Thr | Arg | Pro | Tyr | Leu | Leu | Gly | |
| | | | | 75 | | | | | 80 | |
| Glu | Val | Phe | Pro | Asp | Leu | Met | Gly | Asp | Ala | |
| | | | | 85 | | | | | 90 | |
| Ala | Pro | Pro | Cys | Ser | Ala | His | Val | Trp | Glu | |
| | | | | 95 | | | | | 100 | |
| Ile | Ser | Arg | Phe | Ser | Ser | Ser | Ile | Leu | Ser | |
| | | | | 105 | | | | | 110 | |
| Gly | Gly | Pro | Asp | Ala | Leu | Arg | Gln | Ala | His | |
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| Arg | Asn | Thr | Arg | Ile | Leu | Leu | Ala | Lys | Ile | |
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| Val | Arg | Phe | Ala | Gln | Ala | Ala | Gly | Val | Lys | |
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| Arg | Leu | Ile | Thr | Val | Ser | Pro | Leu | Ala | Val | |
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| Glu | Arg | Leu | Leu | Asn | Arg | Leu | Lys | Val | His | |
| | | | | 155 | | | | | 160 | |

| | | | | | | | | | | |
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| Asp | Gly | Lys | Pro | Val | Phe | Ala | Cys | Gln | Ile | |
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| Glu | Val | Asp | Asp | Ile | Thr | Leu | Gln | Ala | Leu | |
| | | | | 185 | | | | | | 190 |
| Asp | Ile | Glu | Pro | Ala | Ala | Asp | Ser | Ala | Ala | |
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| Gly | Ala | Tyr | Arg | Tyr | Asp | Val | Phe | Val | Arg | |
| | | | | 25 | | | | | 30 | |
| Arg | Leu | Gly | Trp | Thr | Ile | Ala | Gly | His | Ser | |
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| Leu | Asp | Glu | His | Ala | Glu | Trp | Asp | Glu | Phe | |
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| Asp | Gly | Pro | Ser | Thr | Ile | His | Val | Val | Ala | |
| | | | | 55 | | | | | 60 | |
| Leu | Asp | Asp | Ala | Arg | Glu | Ile | Cys | Gly | Tyr | |
| | | | | 65 | | | | | 70 | |
| Ala | Arg | Leu | Leu | Pro | Thr | Thr | Gly | Pro | Tyr | |
| | | | | 75 | | | | | 80 | |
| Leu | Leu | Arg | Asp | Val | Phe | Ala | His | Leu | Leu | |
| | | | | 85 | | | | | 90 | |
| Gly | Ser | Ser | Pro | Ala | Pro | Gln | Ser | Pro | Ala | |
| | | | | 95 | | | | | 100 | |
| Val | Trp | Glu | Met | Ser | Arg | Phe | Ala | Ala | Ser | |
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| Arg | Arg | Arg | Arg | Ser | Ala | Thr | Glu | Arg | Glu | |
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| Pro | Leu | Gly | Met | Ala | Phe | Phe | Pro | Ser | Val | |
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| Leu | Thr | Val | Ala | Ala | Ser | Leu | Gly | Ala | Thr | |
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| Arg | Val | Val | Gly | Val | Met | Thr | Pro | Ser | Ile | |
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| Glu | Arg | Leu | Tyr | Arg | Arg | Ser | Gly | Ile | Ala | |
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| Leu | His | Arg | Leu | Gly | Asn | Ala | Met | Pro | Gly | |
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| Ala | Gly | Gly | Ser | Leu | Ser | Ala | Cys | Ser | Ile | |
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| Asp | Leu | Pro | Arg | Leu | Ala | Phe | Ala | Pro | Leu | |
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| Gln | Phe | Ser | Ala | Ala | Glu | Asn | Glu | Gln | Gln | |
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| Leu | Phe | Gln | Gln | Ile | Ala | Ala | Tyr | Thr | Lys | |
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| Arg | Leu | Gly | Phe | Glu | Tyr | Cys | Cys | Tyr | Gly | |
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| Ile | Arg | Val | Pro | Leu | Pro | Ile | Ser | Lys | Pro | |
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| Val | Val | Ala | Ile | Phe | Asp | Thr | Tyr | Pro | Asn | |
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| Gly | Trp | Met | Glu | Arg | Tyr | Gln | Glu | Met | Asn | |
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| Tyr | Leu | Glu | Val | Asp | Pro | Thr | Val | Arg | Glu | |
| | | | | 75 | | | | | 80 | |
| Gly | Ala | Leu | Ser | Ser | Asn | Met | Ile | Val | Trp | |
| | | | | 85 | | | | | 90 | |
| Pro | Glu | Ala | Ser | Ala | Ser | Asp | Ala | Thr | Thr | |
| | | | | 95 | | | | | 100 | |
| Leu | Trp | Ser | Asp | Ala | Arg | Asp | His | Gly | Leu | |
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| Ala | Val | Gly | Val | Ala | Gln | Ser | Ser | Trp | Ala | |
| | | | | 115 | | | | | 120 | |
| Ser | Arg | Gly | Val | Phe | Gly | Leu | Leu | Thr | Ile | |
| | | | | 125 | | | | | 130 | |
| Ala | Arg | His | Thr | Asp | Arg | Leu | Thr | Ser | Ala | |
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| Glu | Ile | Asn | His | Leu | Thr | Leu | Gln | Ala | Asn | |
| | | | | 145 | | | | | 150 | |
| Trp | Leu | Ala | Asn | Met | Ser | His | Ser | Leu | Met | |
| | | | | 155 | | | | | 160 | |
| Ser | Arg | Phe | Leu | Val | Pro | Lys | Leu | Ala | Pro | |
| | | | | 165 | | | | | 170 | |
| Glu | Ser | Gly | Val | Ala | Leu | Thr | His | Arg | Glu | |
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| Arg | Glu | Val | Leu | Cys | Trp | Thr | Gly | Glu | Gly | |
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| Lys | Thr | Ala | Cys | Glu | Ile | Gly | Gln | Ile | Leu | |
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| Ser | Ile | Ser | Glu | Arg | Thr | Val | Asn | Phe | His | |
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| Val | Asn | Asn | Ile | Leu | Asp | Lys | Leu | Gly | Ala | |
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<213> *B. pseudomallei* DD503 bpmR2

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 Ala Ala Thr Leu Gly Tyr Glu Tyr Ala Ala
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 Tyr Gly Met Arg Arg Pro Phe Pro Ile Ser
 45 50
 Asn Pro Pro Ile Leu Met Val Ser Asn Tyr
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 Pro Ala Arg Trp Gln Glu Arg Tyr Ile Glu
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 Ala Arg Phe Ala Asn Ile Asp Gly Ala Val
 75 80
 Lys Ala Ala Leu Gly Ser Asp Arg Pro Val
 85 90
 Thr Trp Ser Ala Pro Ala Asn Ala Ser Lys
 95 100
 Ser Ala Phe Trp Ala Glu Ala Leu Ser Phe
 105 110
 Gly Ile Ala His Gly Trp Ser Ser Ala Ser
 115 120
 Arg Gly Ala Asp Gly Ala Ile Gly Val Leu
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 Thr Leu Ser Arg Thr Gln Asp Pro Ile Asp
 135 140
 Thr Ala Glu Lys Phe Arg Asn Glu Ser Ile
 145 150
 Val His Trp Leu Ala Asn Val Ala His Ala
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 Ser Met Ala Pro Phe Leu Pro Ala Ala Asp
 165 170
 Glu Phe Asp Pro Asp Leu Thr Arg Arg Glu
 175 180
 Thr Asp Val Leu Lys Trp Thr Ala Asp Gly
 185 190
 Lys Thr Ala Tyr Glu Ile Ala Leu Ile Leu
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 Ser Ile Ser Glu Ser Thr Val Asn Phe His
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 Val Lys Asn Ile Val Ser Lys Leu Gly Ser
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| Asp | Val | Arg | Thr | Leu | Val | Glu | Thr | Phe | Arg |
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| Gln | Ala | Ala | Leu | Gln | Ile | Gly | Tyr | Gln | His |
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| His | Ala | Ile | Val | Glu | Leu | Ser | Gly | Ala | Ser |
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| His | Pro | Ala | Ser | Ile | Asp | Val | Val | Ser | Leu |
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| His | Tyr | Pro | Ser | Glu | Trp | Val | Glu | His | Tyr |
| | | | | 55 | | | | | 60 |
| Thr | Arg | Asn | Asp | Tyr | Phe | Ala | Ile | Asp | Pro |
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| Val | His | Arg | Ala | Ala | Phe | Arg | Tyr | Ser | Thr |
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| Pro | Phe | Ser | Trp | Asn | Asp | Val | Ala | Thr | Ala |
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| Asn | Leu | Arg | Glu | Arg | His | Leu | Leu | Met | Glu |
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| Ala | Glu | Asp | Ala | Gly | Leu | Asp | Asn | Gly | Ile |
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| Ser | Ile | Pro | Leu | His | Gln | Pro | Leu | Gly | Arg |
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| Val | Leu | Leu | Val | Ser | Leu | Ser | Gly | Thr | Ala |
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| Pro | Thr | His | Asp | Ala | Asp | Ala | Lys | Trp | Arg |
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| Asn | Ala | Tyr | Leu | Leu | Gly | Met | Gln | Phe | Asn |
| | | | | 145 | | | | | 150 |
| Leu | Gln | Phe | Gln | Ser | Met | Arg | Thr | Cys | Arg |
| | | | | 155 | | | | | 160 |
| Pro | Ile | Pro | Pro | Ser | Val | His | Leu | Thr | Asp |
| | | | | 165 | | | | | 170 |
| Arg | Glu | Gln | Met | Cys | Leu | Thr | Trp | Val | Ala |
| | | | | 175 | | | | | 180 |
| Arg | Gly | Lys | Ser | Ser | Trp | Val | Ile | Ala | Asn |
| | | | | 185 | | | | | 190 |
| Met | Leu | Asp | Ile | Ser | Lys | Tyr | Thr | Val | Asp |
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| Phe | His | Ile | Glu | Asn | Ala | Met | Glu | Lys | Leu |
| | | | | 205 | | | | | 210 |
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<213> *B. pseudomallei* DD503 bpmR4

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| Ser | Arg | Arg | Ser | Ala | Arg | Ala | Gly | Ala | Ile | | |
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| Ala | Ala | Arg | Pro | Ala | Phe | Arg | Ala | Arg | Arg | | |
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| Thr | Gly | Gly | Ser | Pro | Arg | Gly | Arg | Ala | Gln | | |
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| Pro | Leu | Ala | Arg | Gly | Gly | Gly | Ala | Arg | Ser | | |
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| Asp | Gln | Pro | Ala | Arg | Arg | Cys | Asp | Asp | Asp | | |
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| Ala | Cys | Gly | Val | Arg | Gln | Met | Lys | His | Asp | | |
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| Arg | Ala | Leu | Arg | Asp | Ala | Glu | Asn | Leu | Arg | | |
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| Asp | Phe | Pro | Arg | Arg | Leu | Ala | Ala | Pro | Arg | | |
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| Pro | Leu | Gln | Arg | Phe | Ala | Leu | Ala | Arg | Gly | | |
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| Gln | Ile | Ala | Arg | Ala | Leu | Pro | Ser | Glu | Pro | | |
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| His | Glu | Ala | Arg | Glu | Gln | Leu | Arg | Gln | Ala | | |
| | | | | 135 | | | | | 140 | | |
| Gln | Gln | Pro | Gln | Tyr | Val | Ala | Arg | Val | Val | | |
| | | | | 145 | | | | | 150 | | |
| Leu | Glu | Arg | Ile | Val | Gly | Arg | His | Ala | Glu | | |
| | | | | 155 | | | | | 160 | | |
| His | Ala | Asp | Arg | Ala | Ala | Ala | Ile | Val | Asn | | |
| | | | | 165 | | | | | 170 | | |
| Gly | Ala | Thr | Glu | Pro | Val | Asp | Glu | Ala | Val | | |
| | | | | 175 | | | | | 180 | | |
| Arg | Phe | Arg | Leu | Val | Ala | His | Glu | Leu | Arg | | |
| | | | | 185 | | | | | 190 | | |
| Ala | Ala | Gly | Arg | Ile | Glu | Val | Val | Val | Pro | | |
| | | | | 195 | | | | | 200 | | |
| Asp | Glu | Arg | His | Gly | Pro | Ala | Pro | Ala | Met | | |
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| Leu | Asn | Asp | Gly | Ile | Asp | Arg | Gln | Val | Val | | |
| | | | | 215 | | | | | 220 | | |
| Gly | Gly | Val | Val | Ala | Gln | Pro | Pro | Leu | Gly | | |
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| | | | | | | | | | |
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| | | | | 235 | | | | | 240 |
| Arg | Arg | Ala | Gly | Asp | Leu | Met | Pro | Val | Arg |
| | | | | 245 | | | | | 250 |
| Glu | Ile | Leu | Glu | Ala | Gln | Leu | Ala | Asn | Val |
| | | | | 255 | | | | | 260 |
| Ile | Arg | Arg | Leu | Leu | Lys | Glu | Ala | Leu | Leu |
| | | | | 265 | | | | | 270 |
| Asn | Ser | Arg | Val | Gln | Asn | Phe | Val | Lys | Arg |
| | | | | 275 | | | | | 280 |
| Thr | Asn | Gly | Gln | Ala | Phe | Glu | His | Arg | Thr |
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| Ser | Glu | Glu | Glu | Ala | Phe | Arg | Ser | Val | Glu |
| | | | | 25 | | | | | 30 |
| Thr | Ala | Ala | Ala | Ala | Leu | Asp | Phe | Glu | Tyr |
| | | | | 35 | | | | | 40 |
| Cys | Ala | Tyr | Gly | Leu | Arg | Val | Pro | Trp | Pro |
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| Leu | Ser | Arg | Pro | Arg | Ile | Glu | Thr | Arg | Ser |
| | | | | 55 | | | | | 60 |
| Asn | Phe | Pro | Glu | Gln | Trp | Lys | Arg | Arg | Tyr |
| | | | | 65 | | | | | 70 |
| Val | Glu | Ala | Gly | Phe | Leu | Asp | Val | Asp | Pro |
| | | | | 75 | | | | | 80 |
| Ile | Leu | Ala | His | Gly | Arg | Arg | Ser | Gln | Gln |
| | | | | 85 | | | | | 90 |
| Pro | Val | Val | Leu | Ala | Glu | Thr | Leu | Phe | Ala |
| | | | | 95 | | | | | 100 |
| Ser | Ala | His | Gln | Met | Trp | Val | Glu | Ala | Gln |
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| Ser | Phe | Gly | Leu | Arg | Phe | Gly | Trp | Ala | Gln |
| | | | | 115 | | | | | 120 |
| Ser | Ser | Phe | Asp | Ala | Tyr | Gly | Gly | Met | Gly |
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| Met | Leu | Ala | Leu | Val | Arg | Ser | Cys | Glu | Pro |
| | | | | 135 | | | | | 140 |
| Val | Thr | Ala | Ala | Glu | Leu | Asp | Ala | Lys | Glu |
| | | | | 145 | | | | | 150 |
| Tyr | Arg | Met | Arg | Trp | Leu | Val | Arg | Thr | Ala |
| | | | | 155 | | | | | 160 |
| His | Ala | Ala | Leu | Gly | Arg | Met | Met | Leu | Pro |
| | | | | 165 | | | | | 170 |

| | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Lys | Leu | Met | Ala | Asp | Pro | Glu | Arg | Gly | Leu | |
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| Thr | Glu | Arg | Glu | Val | Glu | Val | Leu | Lys | Trp | |
| | | | | 185 | | | | | | 190 |
| Ala | Ala | Asp | Gly | Lys | Thr | Ser | Gly | Glu | Ile | |
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| Ser | Lys | Ile | Leu | Ala | Ile | Ser | Val | Asp | Thr | |
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| Val | Asn | Phe | His | Val | Lys | Asn | Ala | Ile | Leu | |
| | | | | 215 | | | | | | 220 |
| Lys | Leu | Arg | Thr | Ala | Asn | Lys | Thr | Ala | Ala | |
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